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2. *Soils*.—(a) Relation of soils to plants as food; (b) relation of soil to plants as to their capacity for absorbing and retaining moisture; (c) physical properties of soils as related to plant rooting.

3. *Slope*.—Influence of direction of hill or ravine slope on (a) moisture, as affected by exposure of a slope to wind or sun; (1) measure the angle made by the sun's rays on level surface, on south slope, on north slope; (2) compare the surface temperature readings on each slope.

4. *Light*.—(a) Part of plant directly related to sunlight; (b) adaptations by which plants avoid shading from their own foliage and from surrounding plants.

5. *Distribution*.—Ways by which plants get into an area; (a) agents of distribution; (b) structural adaptations to these agents.

REFERENCES: Cowles, *Plant Societies of Chicago and Vicinity*; Coulter, *Plant Relations*; *First Ohio Weed Manual*; Gaye, *The Great World Farm*; King, *The Soil*.

GEOGRAPHY.

ZONIA BABER.

THE work in geography for October for the pupils in the Elementary School will be based on the field work done in the region of Chicago. An outline for the year's work for the Elementary School will appear in the November number.

Two courses will be given in geography for pedagogic students:

Course A, for entering students, will be based upon field trips to the ravines along the north shore, the Chicago river, the old and the new canal, sand dunes at Dune Park, and to a farm. The work of streams and wind as surface-shaping agents, and man's adaptation to resultant conditions, will be especially considered.

Course B, for students familiar with Course A, will be the consideration of the study and teaching of Eurasia (see COURSE OF STUDY, Vol. I, No. 10).

SUGGESTION ON FIELD WORK.

A study of nature or culture products in natural relations adapted to any region.

The value of landscape as a potent factor in intellectual and æsthetic development needs little argument, but the means by which the highest value may be obtained from its study requires deepest consideration. Living in a region where the arrangement of lines, surfaces, and colors produces the most pleasing effect, which we call beautiful scenery, by no means insures the inhabitant a high æsthetic development. Nor does a residence in a region where nature has displayed, or is displaying, her most valued secrets of landscape-making declare a high appreciation of natural law on the part of the

native. There is no doubt an unconscious training resulting from various aspects of one's environment, but intellectual consciousness is vouchsafed only to the observer and thinker. Unhappily the majority of our people cannot be included in this classification. Hence the study of the different phases of one's environment is of highest educative value. To be cognizant of present forms and forces acting upon the earth is not sufficient, for it is the knowledge of the genesis of the forms and of the evolution of life of a region that gives intellectual perspective to both the æsthetic and cultural aspects.

Modeling, painting, and drawing are potent means by which a student becomes conscious of the variety and beauty of lines, surfaces, and solids of a given landscape, and of the changing tints and shades of the vegetable covering, or barren rock or soil. And the attempt to answer the question why the hills, mountains, plains, valleys, rivers, lakes, swamps, prairies, forests, or deserts exist, why certain cultural aspects are found in the region under consideration, gives vitality and sanity to the study.

Model map of the region to be studied. Draw a topographic map of the region. Draw and paint characteristic scenes of the area. Describe :

TOPOGRAPHY.

1. Topography of special area ; relation to surrounding country.
2. Forms of land and water which lend themselves most readily to culture—farming, grazing, mining, forestry, manufacture, fishery, homes.
3. Elements which are at present concerned in changing the surface of the region—wind, rain, streams, snow, frost, glaciers, snowslides, avalanches, lakes, seas, plants, animals, man. Which are most potent factors in changing the surface ?
4. Relation of the topography to drainage ; of drainage to the topography. Stream work. Describe valley-making from the beginning to base leveling. Make drawings of the earliest, middle, and latest stages of valley development, from known examples, if possible, otherwise from imaginary cases. Give reasons for the condition of the valleys in the region under consideration. Predict future of the region. What stage of valley development is best adapted to agriculture—give examples ; to forestry—give examples ; to manufacture—give examples ? Adaptation of valleys for railroad purposes. Use of river terraces in railroad construction. Stage of river erosion best adapted to navigation. Cause and effect of islands, bars, deltas, of rapids, falls. How overcome by navigation companies.

REFERENCES: Geikie, *Earth Sculpture, Text-Book of Geology*, and *Physical Geography*; Tarr, *Physical Geography*; Russell, *Rivers of North America*; Scott, *Geology*; Roberts, *The Earth's History*; Mill, *Realm of Nature*; Shaler, *Aspect of the Earth*; Gilbert, *Henry Mountains*, U. S. Geological Survey; Alden and Salisbury, *Chicago and Environs*.

5. *Wind*.—Evidences of wind work in the region. Make drawings showing effect on soil, if existing ; on vegetation. Prevailing wind. Cause.

If dunes exist, trace formation from incipency to maturity and decay. Source of material. Trace story of plant life on dune (see outline on field work). Cultural value of wind-made surfaces.

6. *Glaciers*.—Part glaciers have played, or are playing, in the region under consideration. What are the evidences that glaciers have affected the region?

Topographic evidences: Part played by glaciers in forming the hills, depressions, lakes, swamps of the region. How accomplished? Are the lakes and ponds of the region increasing or decreasing in size? Cause? Fresh or salt? Why?

Soil evidences of glacial origin: Material, source? Arrangement? Depth? Was glaciation of value or a detriment to the region from the cultural and scenic standpoint? How would the region probably appear had the country not been glaciated?

REFERENCES: Salisbury, *Journal of Geology*, Vols. I and IV; Davis and Shaler, *Glaciers*; Davis, *Physical Geography*; Scott, *Introduction to Geology*; Chamberlin, *Terminal Moraine*, Third U. S. Geological Survey; Russell, *Glaciers of North America*; Geikie, *Earth Sculpture*.

7. *Soil*.—Nature of the soil and subsoil in the region—loamy, clayey, sandy, gravelly? Depth of soil? Make drawing showing same in river or railroad cuts. Give well data. Is the soil residual or transported? Describe manner of accumulation. Describe country rock. To what natural plants is the soil best adapted? To what agricultural plants? (See outline on field work.)

REFERENCE: King, *Soil*.

8. *Underground water*.—Evidences of effect of underground water on the topography in region considered. Sink holes in limestone regions. Formation? Caves—how formed? destroyed? Evidences of circulation of underground water shown in country rock. Depth at which constant underground water is found. Well data. Depth of constant rivers.

During the quarter each student in Course B will be expected to work out plans for the teaching of certain regions selected in this vicinity.

OUTLINE OF HISTORY FOR THE ELEMENTARY SCHOOL.

EMILY J. RICE.

THE school is an organization for work. It is a place where the activities of the home and society should be carried on in such a way that the children may take part in them, a place for the gaining of social experience. Under the old school system,